Bruhath Bengaluru Mahanagara Palike

# QUALITY ASSURANCE/QUALITY CONTROL REPORT

Office of the Chief Engineer (Quality Assurance/Control) Annexure-05,
BBMP Head Office, Hudson circle Bengalore-001,
Ph.no:08022975541, E-mail ID:qualitycontrol.bbmp@gmail.com

# QUALITY ASSURANCE REPORT/QUALITY CONTROL REPORT

| AEE/QA/PR/74/2022-23, DATE: 12/06/2023 | | |
|---|---|---|
| **Name of Work** | : | Improvements to roads & drains at Nanjappa layout main road, Cross road, Ramanna garden and surrounding areas (vidyaranyapura)<br>Estimated cost 55.00 Lakhs |
| **Job Code** | : | 014-23-000011 |
| **Bill No. & Amount** | : | **1st &Final Bill, Rs.57,71,978.0 (including GST)** |
| **Name of Agency** | : | **Sri.Gopi Reddy** |
| **Type of Test Performed** | : | Bitumen Content and Gradation test as per Table 500.10 & Table 500.17 MORTH V Revision. |
| **Materials on which Tests Was Performed** | : | 1. Dense Bituminous Macadam (Grade II)<br>2. Bituminous Concrete (Grade II) |
| **Officers present during inspection** | : | 1. Smt. Archana AE – Ward no 09<br>2.Sri. Kiran.B.. EE-Quality Assurance<br>3. Sri Jayaraju.K.S. AEE-Quality Assurance |
| **Project Management Consultants/Third Party** | : | **Tejus Consultantas** |
| **Observations** | : | ➢ Bitumen Content and Gradation Test was conducted by Project Management Consultants at random locations in presence of AE – Ward no 09 along with AEE of QA division, EE of QA division .<br>➢ The Bitumen content & Gradation Test were conducted for DBM(Grade II), BC (Grade-II).The readings and results are recorded by the PMC consultants.<br>➢ The readings of Bitumen Content & Gradation Test results are tabulated and analysis of test results done by PMC is here by furnished.<br>➢ The location wise test results are reproduced in the tables shown below. |
| **Test Locations** | : | Location 1: Nanjappa layout main road (Opp to H No18, Opp to H No 78,opp to H No 114 ) |

12/6/23 12/6/23

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ ಯಲಹಂಕ ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ವಿಭಾಗ ಯಲಹಂಕ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

**Table-01: Bitumen Content and gradation Test Results in Nanjappa layout main road at Random locations**

**BC- (GRADE-II)**

| Landmark | Opp to H No18 | Opp to H No 78 | opp to H No 114 |
|---|---|---|---|
| Description | Trial 1 | Trail 2 | Trail 3 |
| 1.Initial weight of sample (gms) w1 | 816 | 552 | 558 |
| 2. final weight of sample after extraction (gms) w2 | 773 | 524 | 529 |
| 3. Initial weight of filter paper (gms) w3 | 2 | 2 | 2 |
| 4. Final weight of filter paper (gms) w4 | 4 | 4 | 4 |
| 5. Increased weight of filter paper (gms) w5=(w4-w3) | 2 | 2 | 2 |
| 6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5 | 45 | 30 | 31 |
| 7. Bitumen content in % (w6/w1)x100 | 5.51 | 5.43 | 5.56 |
| 8.Average | 5.50 | | |

| SIEVE SIZE mm | Trail 1 Weight Retained, gm | Cumulative Weight Retained | %Cumulative Retained | % Passing | Requirement as per MORTH table 500.17 |
|---|---|---|---|---|---|
| 19.00 | 0 | 0 | 0 | 100.00 | 100 |
| 13.2 | 42 | 42 | 5.43 | 94.57 | 90-100 |
| 9.5 | 101 | 143 | 18.50 | 81.50 | 70-88 |
| 4.75 | 98 | 241 | 31.18 | 68.82 | 53-71 |
| 2.36 | 55 | 296 | 38.29 | 61.71 | 42-58 |
| 1.18 | 52 | 348 | 45.02 | 54.98 | 34-48 |
| 0.6 | 41 | 389 | 50.32 | 49.68 | 26-38 |
| 0.3 | 35 | 424 | 54.85 | 45.15 | 18-28 |
| 0.15 | 31 | 455 | 58.86 | 41.14 | 12-20 |
| 0.075 | 32 | 497 | 64.29 | 35.71 | 4-10 |

| SIEVE SIZE mm | Trail 2 Weight Retained, gm | Cumulative Weight Retained | %Cumulative Retained | % Passing | Requirement as per MORTH table 500.17 |
|---|---|---|---|---|---|
| 19.00 | 0 | 0 | 0 | 100.00 | 100 |
| 13.2 | 41 | 41 | 7.82 | 92.18 | 90-100 |
| 9.5 | 95 | 136 | 25.95 | 74.05 | 70-88 |
| 4.75 | 88 | 224 | 42.75 | 57.25 | 53-71 |
| 2.36 | 62 | 286 | 54.58 | 45.42 | 42-58 |
| 1.18 | 35 | 321 | 61.26 | 38.74 | 34-48 |
| 0.6 | 32 | 353 | 67.37 | 32.63 | 26-38 |
| 0.3 | 35 | 388 | 74.05 | 25.95 | 18-28 |
| 0.15 | 32 | 420 | 80.15 | 19.85 | 12-20 |
| 0.075 | 56 | 476 | 90.84 | 9.16 | 4-10 |

| SIEVE SIZE mm | Trail 3 Weight Retained, gm | Cumulative Weight Retained | %Cumulative Retained | % Passing | Requirement as per MORTH table 500.17 |
|---|---|---|---|---|---|
| 19.00 | 0 | 0 | 0 | 100.00 | 100 |
| 13.2 | 43 | 43 | 8.13 | 91.87 | 90-100 |
| 9.5 | 101 | 144 | 27.22 | 72.78 | 70-88 |
| 4.75 | 98 | 242 | 45.75 | 54.25 | 53-71 |
| 2.36 | 55 | 297 | 56.14 | 43.86 | 42-58 |
| 1.18 | 42 | 339 | 64.08 | 35.92 | 34-48 |
| 0.6 | 41 | 380 | 71.83 | 28.17 | 26-38 |
| 0.3 | 35 | 415 | 78.45 | 21.55 | 18-28 |
| 0.15 | 31 | 446 | 84.31 | 15.69 | 12-20 |
| 0.075 | 42 | 488 | 92.25 | 7.75 | 4-10 |

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ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ ಯಲಹಂಕ ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

**Table-02: Bitumen Content and gradation Test Results in Nanjappa layout main road at Random locations**
**DBM- (GRADE-II)**

| LandMark | Opp to H No 78 |
|---|---|
| Description | Trial 1 |
| 1.Initial weight of sample (gms) w1 | 622 |
| 2. final weight of sample after extraction (gms) w2 | 596 |
| 3. Initial weight of filter paper (gms) w3. | 2 |
| 4. Final weight of filter paper (gms) w4 | 4 |
| 5. Increased weight of filter paper (gms) w5=(w4-w3) | 2 |
| 6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5 | 28 |
| 7. Bitumen content in % (w6/w1)x100 | 4.50 |

| SIEVE SIZE mm | Trail 1 | | | | Requirement as per MORTH table 500.10 |
|---|---|---|---|---|---|
| | Weight Retained, gm | Cumulative Weight Retained | %Cumulative Retained | % Passing | |
| 37.5 | 0 | 0 | 0 | 100.00 | 100.00 |
| 26.50 | 51 | 51 | 8.56 | 91.44 | 90-100 |
| 19.00 | 102 | 153 | 25.67 | 74.33 | 71-95 |
| 13.20 | 98 | 251 | 42.11 | 57.89 | 56-80 |
| 4.75 | 92 | 343 | 57.55 | 42.45 | 38-54 |
| 2.36 | 78 | 421 | 70.64 | 29.36 | 28-42 |
| 0.30 | 72 | 493 | 82.72 | 17.28 | 7-21 |
| 0.075 | 62 | 555 | 93.12 | 6.88 | 2-8 |

**Conclusion:**

The file containing **1st & Final bill** has been submitted for the above work to QA department on **07.06.2023** requesting for spot inspection. Engineers of QA/QC division have visited the work spot on**08.06.2023.**

PMC team was instructed to assess the Gradation & Bitumen content test for DBM (Grade-II) & BC (Grade-II) on Asphalted road . The Bitumen Content and Gradation Tests were conducted by PMC in presence of engineer in charge of work.

From the test results furnished by PMC, it is concluded that the results of the samplescollected are in accordance with the standards/ specifications mention in the IRC codes. However, the results submitted by the PMC have been reproduced here with for further needful action. The results checked by QA/QC relates only for item tested in the particular location randomly.

Engineer in charge of work shall ensure that work executed as per this bill is not claimed in any other bill /work or else Engineer in charge of work shall be held responsible.

Further, QA/QC directs the Engineer in-charge of the work that all materials used for the work shall be inspected, tested and accepted as per the relevant specifications before incorporation in the work. The frequencies and methods of sampling and testing materials, including those required for definite purpose and not covered by MORT&H specifications shall be in accordance to the relevant IRC or BIS or AASHTO/ASTM/BS standards in order of priority.

All materials or work not conforming to the requirements of the specifications shall be considered unacceptable and rejected. The unacceptable materials or works that are rejected shall be immediately removed unless the defects are corrected and approved by the engineer in-charge of work.

The concerned Engineer in charge of the work shall follow the direction issued by Chief Commissioner Letter number dated 01.08.2022 and 14.09.2022 and take necessary action as appropriate in accordance with the law.

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Note: -

This report by QA/QC is pertaining to the work carried out in **1st & Final bill** only. Therefore, further QA/QC reports shall be obtained for the items of work carried out in future Running Account bill / Final bill.

Safety precautions shall be taken at work spot to prevent any mishap, injuries or loss of life to general public and construction workers according to guidelines laid down in code of practices.

Engineer in charge of work shall obtain requisite approval and Implement traffic management plan prior to commencement of work.

Engineer in charge of work shall display details of work, work code, cost of project, start and completion date, and information of Engineer in charge of work with contact numbers at work spot.

Engineer in charge of work and Agency shall ensure that if any damages or defects occur pertaining to the executed work within the Defect Liability period (DLP), The same shall be rectified immediately on top priority without fail.

Engineer in charge of work shall ensure that any changes/ modification/change in location in the sanctioned estimate to be got approved by competent authority.

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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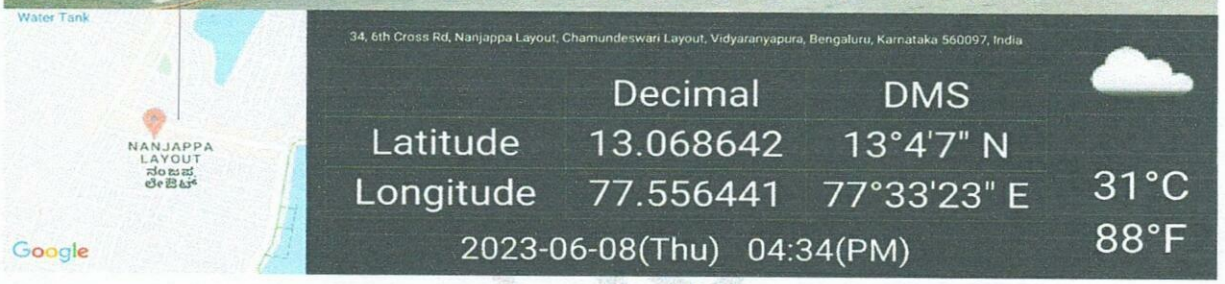
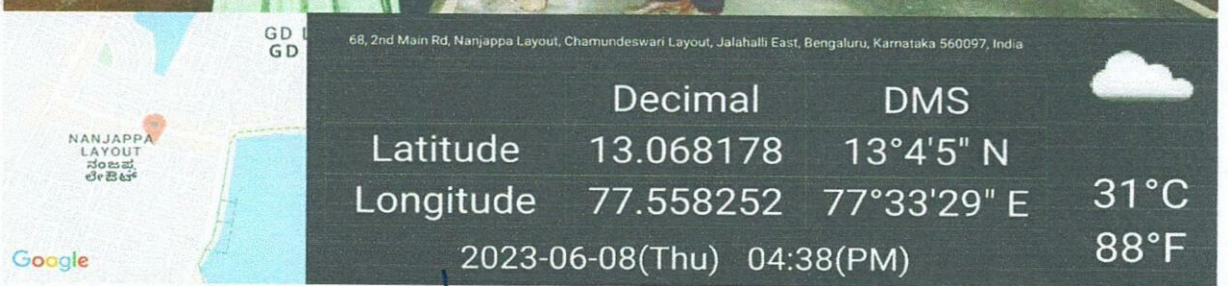
014-23-000011

**Location 1: Nanjappa layout main road (Opp to H No18, Opp to H No 78,opp to H No 114 )**



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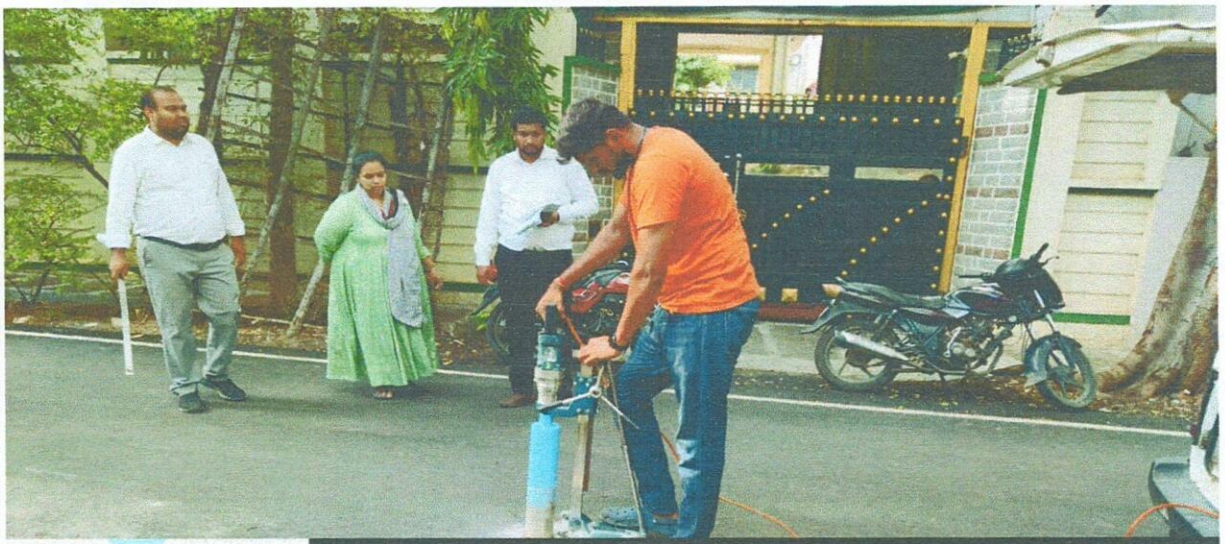

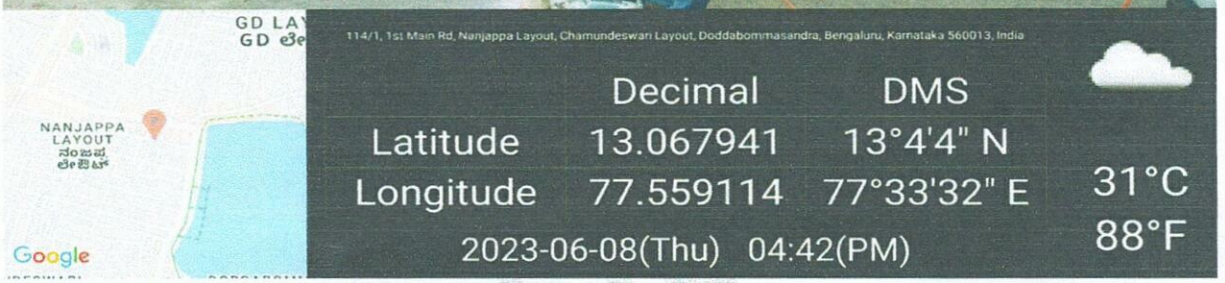


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